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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/076,154	02/14/2002	Yoshinori Hino	10417-118001/ F51-142893M	8619
26211	7590	04/05/2004	EXAMINER	
FISH & RICHARDSON P.C. 45 ROCKEFELLER PLAZA, SUITE 2800 NEW YORK, NY 10111			TRAN, TAN N	
			ART UNIT	PAPER NUMBER

2826

DATE MAILED: 04/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/076,154

Applicant(s) **UK**

HINO ET AL.

Examiner

TAN N TRAN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on amendment filed on 12/10/03 and 12/15/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17, 21-23, 28 and 31-37 is/are pending in the application.
- 4a) Of the above claim(s) 1-17 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22 is/are allowed.
- 6) ☒ Claim(s) 21, 28 and 31-37 is/are rejected.
- 7) ☒ Claim(s) 23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The indicated allowability of claims 21,28,31-33 is withdrawn in view of the newly discovered reference(s) to claims 21,28,31-33. Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 21,28,31-37 are rejected under 35 U.S.C. 102(e) as being anticipated by Harada et al. (6,476,491).

With regard to claims 21,31,34, Harada et al. discloses a semiconductor substrate 1; a gate oxide film 3 provided over the semiconductor substrate 1; a gate electrode 4 formed on the gate oxide film 3; a source/drain region 5 formed in the semiconductor substrate 1 and disposed adjacent to the gate electrode 4; a lower layer wiring 21 connected to the source/drain region 5 with contact; an interlayer insulating film 22 covering the lower layer wiring 21; a via hole 24 formed in an interlayer insulating film 22; and an upper layer wiring 25 having an intermetallic compound layer 101 serves as a pad portion wherein the intermetallic compound layer 101 disposed over the interlayer insulating film 22 and connected to the lower layer wiring 21

through via hole 24, and wherein no hole connecting the upper layer wiring 25 and the lower layer wiring is formed under the intermetallic compound layer 101. (Note fig. 1 of Harada et al.).

With regard to claims 28,35, Harada et al. discloses the interlayer insulating layer 22 is provided with additional holes 23 to couple the upper layer wiring 25 to the lower layer wiring 21. (Note fig. 1 of Harada et al.).

With regard to claim 32,33,36, Harada et al. discloses a bump electrode provided at the intermetallic compound layer 101 serves as a pad portion of the bump electrode. (Note lines 19-21, column 18, fig. 1 of Harada et al.).

With regard to claim 37, Harada et al. discloses the lower layer wiring 21 arranged below the bump electrode. (Note lines 19-21, column 18, fig. 1 of Harada et al.).

Allowable Subject Matter

3. Claim 23 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 23 is allowable over the prior art of record, because none of these references disclose or can be combined to yield the claimed invention such as the low concentration region extends shallowly to a surface layer under the gate electrode to connect to the source/drain region and to contact the semiconductor region as recited in claim 23.

4. Claim 22 is allowable over the prior art of record, because none of these references disclose or can be combined to yield the claimed invention such as a low concentration region of the same conductivity type as the source/drain region formed under the gate electrode so as to

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connected to the source/drain region and to contact the semiconductor region as recited in claim 22.

Response to Amendment

5. Applicant's arguments with respect to claims 21,28,31-37 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Tan Tran whose telephone number is (571) 272-1923. The examiner can normally be reached on M-F 8:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for after final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

TT

Mar 2004


Minhloan Tran
Primary Examiner
Art Unit 2826